



Andrenidae (Hymenoptera, Apoidea) of Korea

Heung-Sik LEE* and Jong-Cheol PAIK¹⁾

National Plant Quarantine Service, Anyang 6-dong 433-1,
Anyang, 430-822, Korea. E-mail: osmiabee@hanmail.net

¹⁾Department of Applied Biology, Suncheon National University,
Suncheon 540-742, Korea. E-mail: jcpaik@sunchon.ac.kr

Abstract A total of 50 species under two genera in the family Andrenidae are listed from Korea based on the examination of specimens in several depositories and literatural review. *Andrena kyusani* Kim & Kim, 1989 is found to be a junior synonym of *A. longitibialis* Hirachima, 1961.

Key words checklist, new synonym, Korean fauna

INTRODUCTION

The family Andrenidae consists of three subfamilies Andreninae, Panurginae, and Oxaeinae (Michener, 2000). Some members of the first two subfamilies occur in the Korean Peninsula. Among them, Andreninae is the biggest, and most members of the subfamily belong to the genus *Andrena*. At present, about 1,200 species of *Andrena* are known to occur in the world, and most of them have been allocated to approximately 95 subgenera.

The first record of the andrenid bees in Korea was *Andrena thoracica* Fabricius by Radszkowski (1890). Yasumatsu (1941) reported 75 species and subspecies and made a check list of the genus *Andrena* from China, Japan, Korea, Mongolia, and the Far East of Russia. Later, some other Korean andrenid bees were added to the list by Hirashima (1952a, b, 1957b), Kim (1970, 1980), Kim and Kim (1983a, b, 1989a), Kim *et al.* (1990), Tadauchi & Lee (1992), and Tadauchi *et al.* (1997).

For a review of the listed species, we examined the collections of Seoul National University, National Institute of Agricultural Science and Technology of the Rural Development Administration, Suncheon National University, and Jeju Folklore and Natural History Museum, preserved specimens identified by Dr. Tadauchi, and Korea University, preserved specimens by Kim (1970, 1980), Kim and Kim (1983a, b, 1989a) and Kim *et al.* (1990). Through this study, *Andrena kyusani* Kim and Kim is found to be a junior synonym of *Andrena longitibialis* Hirashima, and *Andrena prostomias* Perez is a misidentification of *A. dentata* Smith.

Some additions and corrections are made in the present checklist of Andrenidae since the previous publication in 1994 (Check List of Insects from Korea by ESK & KSAE). This checklist is mainly based on the examination of specimens in several depositories and contains the previous records except for the confirmed misidentification of the obvious records. Information from published and unpublished literatures were also consulted. The first description articles and mainly Korean records of the listed species were given in the synonymy list.

* To whom correspondence should be addressed.

As a result, a total of 50 species under two genera of Andrenidae are listed from Korea.

Superfamily Apoidea 꿀벌上科

Family Andrenidae 애꽃벌科

Subfamily Andreninae 애꽃벌亞科

Genus *Andrena* Fabricius, 1775 애꽃벌屬

Andrena Fabricius, 1775, Syst. Ent., p. 376. Type-species: *Apis helvola* Linnaeus, 1758, by designation of Viereck, 1912, Proc. U. S. Nat. Mus. 37: 613.

Anthrena Illiger, 1801, Mag. Insect. 1: 127. unjustified emendation of *Andrena* Fabricius, 1775.

Anthocharessa Gistel, 1850, Isis (Encycl. Ztschr.), 6: 82. Type-species: *Apis helvola* Linnaeus, 1758. unjustified replacement for *Andrena* Fabricius, 1775.

Subgenus *Andrena* (s. str.)

Andrena (*Andrena*) *benefica* Hirashima, 1962 작은애벌꽃

Andrena (*Andrena*) *benefica* Hirashima, 1962, J. Fac. Agr., Kyushu Univ., 12(2): 151 (Japan); Tadauchi *et al.*, 1987: 45–46 (Korea); Tadauchi *et al.*, 1997: 188–9 (Korea: Jeju-do).

Andrena (*Andrena*) *binifica* [sic] : Kim & Kim, 1983: 5 (first Korean record); ESK & KSAE, 1994: 266 (Korea).

Andrena (*Andrena*) *benefica* [sic] : Kim, 1996: 209 (Korea).

Distribution. Korea (incl. Jeju-do), Japan, China, and Russian Far East.

Andrena (*Andrena*) *brevihirtiscopa* Hirashima, 1962 작은솔애꽃벌

Andrena (*Andrena*) *brevihirtiscopa* Hirashima, 1962, J. Fac. Agr., Kyushu Univ., 12: 124 (Japan); Kim & Kim, 1983b: 71 (first Korean record); Tadauchi & Lee, 1992: 48 (Korea); Kim, 1996: 209 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (incl. Jeju-do), Japan, China, and Russian Far East.

Andrena (*Andrena*) *dolharubang* Tadauchi et Xu, 1997 제주애꽃벌 (신칭)

Andrena (*Andrena*) *dolharubang* Tadauchi et Xu, 1997, in Tadauchi *et al.*, Esakia, 37: 189–190 (Jeju-do).

Distribution. Korea (Jeju-do).

Notes. This species was described with a female from Jeju-do, Korea by Tadauchi *et al.* (1997), but we have not been able to collect it yet.

Andrena (*Andrena*) *hondoica* Hirashima, 1962 혼도에꽃벌

Andrena (*Andrena*) *hondoica* Hirashima, 1962, J. Fac. Agr., Kyushu Univ., 12: 144 (Japan); ESK & KSAE, 1994: 266 (first Korean record); Kim, 1996: 209 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea and Japan.

Notes. This species was first recorded from Korea only in the list by ESK & KSAE (1994).

Andrena (*Andrena*) *ishiharai* Hirashima, 1953 이시하라애꽃벌

Andrena (*Andrena*) *ishiharai* Hirashima, 1953, Trans. Shikoku Ent. Soc., 3: 33 (Japan); Kim & Kim, 1983b: 70 (first Korean record); Tadauchi & Lee, 1992: 48 (Jeju-do); ESK & KSAE, 1994: 266 (Korea); Kim, 1996:

210 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (incl. Jeju), Japan, and Russian Far East.

***Andrena (Andrena) longitibialis* Hirashima, 1962 긴다리에꽃벌 (규산에꽃벌)**

Andrena (Andrena) longitibialis Hirashima, 1962. J. Fac. Agr., Kyushu Univ., 12: 139 (Japan); Tadauchi & Lee, 1992: 49 (Korea); Kim, 1996: 210 (Korea); Tadauchi *et al.*, 1997: 200 (in list).

Andrena (Andrena) kyusani Kim & Kim, 1989a, Korean J. Ent., 19(3): 200 (first Korean record); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 210 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list) (Syn. nov.).

Distribution. Korea (Central, South) and Japan.

Notes. This species was first recorded from Korea by Kim & Kim (1989a) as *A. kyusani*. The type specimens of *Andrena kyusani* deposited in Korea University were compared with specimens of *A. longitibialis*. We recognized that the former is a new synonym of the later.

***Andrena (Andrena) mikado* Strand et Yasumatsu, 1938 미카도에꽃벌**

Andrena (Melandrena) mikado Strand et Yasumatsu, 1938. Mushi, 11: 67 (Japan); Kim, 1970: 824 (first Korean record).

Andrena mikado: Kim, 1970: 660 (first Korean record).

Andrena (Andrena) mikado: Tadauchi & Lee, 1992: 48 (Korea); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 210 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (incl. Jeju) and Japan.

***Andrena (Andrena) sakagamii* Tadauchi, Hirashima & Matsumura, 1987 사카가미에꽃벌**

Andrena (Andrena) sakagamii Tadauchi, Hirashima & Matsumura, 1987, J. Fac. Agr., Kyushu Univ., 31: 29. Tadauchi & Lee, 1992: 48 (first Korean record); Kim, 1996: 210 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea, Japan, and Russian Far East.

Subgenus *Calomelissa* Hirashima et LaBerge, 1963

Calomelissa Hirashima et LaBerge, 1963, J. Fac. Agr., Kyushu Univ., 12: 241. Type-species: *Andrena prostomias* Perez, 1905, by original designation.

***Andrena (Calomelissa) tsukubana* Hirashima, 1957 박하에꽃벌**

Andrena tsukubana Hirashima, 1957, Mushi, 30(9): 55 (Japan).

Andrena (Calomelissa) tsukubana: Kim & Kim, 1983a: 6 (first Korean record); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 210 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central, South) and Japan.

Subgenus *Chlorandrena* Perez, 1890

Chlorandrena Perez, 1890, Actes de la Societe Lenneenne de Bordeaux 44: 172. Type-species: *Andrena humilis* Imhoff, 1832 by subsequent designation of Hedicke, 1933: 211.

***Andrena (Chlorandrena) knuthi* Alfken, 1900 크누드에꽃벌**

Andrena knuthi Alfken, 1900, Ent. Nachr., 26: 178 (Japan); Kim, 1970: 661, 825 (Korea).

Andrena (Chrysandrena) knuthi: Hirashima, 1952: 41 (first Korean record); Kim, 1996: 211 (Korea).

Andrena (Chlorandrena) knuthi: ESK & KSAE, 1994: 266 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central), Japan, and China.

Notes. The records of this species from Korea were likely to be suspected as ones of *A. okinawana*.

***Andrena (Chlorandrena) knuthiformis* Hirashima, 1952 크누드형애꽃벌 (신칭)**

Andrena (Chrysandrena) knuthiformis Hirashima, 1952, Mushi, 23(5): 43 (China, Korea); Kim, 1996: 211 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central), and Northern China.

***Andrena (Chlorandrena) okinawana* Matsumura et Uchida, 1926 남방애꽃벌 (신칭)**

Andrena okianwana Matsumura et Uchida, 1926, Ins. Mats., 1: 69 (Japan);

Andrena (Chlorandrena) knuthi okinawana: Hirashima, 1963b: 262.

Andrena (Chlorandrena) okinawana: Tadauchi & Lee, 1992: 54 (first Korean record); Kim, 1996: 210 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central, South, Jeju), Japan, and China.

***Andrena (Chlorandrena) taraxaci orienticola* Stand, 1915 동양애꽃벌 (신칭)**

Andrena humilis var. *orienticola* Strand, 1915, Ent. Mitt., 4: 72 (China).

Andrena (Chlorandrena) taraxaci chikuzenensis Hirashima, 1957, Mushi, 30: 52 (Japan); Tadauchi *et al.*, 1997: 198 (first Korean record, Jeju). [Syn. by Xu & Tadauchi, 1998]

Andrena (Chlorandrena) taraxaci orienticola: Warncke, 1967, Eos, 43: 204, 295; Xu & Tadauchi, 1998: 97 (Korea).

Distribution. Korea (incl. Jeju), Japan, and China.

Subgenus *Cnemidandrena* Hedicke, 1933

Cnemidandrena Hedicke, 1933, Mitt. zool. Mus. Berlin, 19: 213. Type-species: *Mellita nigriceps* Kirby, 1802, by original designation.

***Andrena (Cnemidandrena) denticulata seneciorum* Hirashima, 1964 히라시마애꽃벌**

Andrena (Cnemidandrena) seneciorum Hirashima, 1964, J. Fac. Agr., Kyushu Univ. 13(1): 40–43 (Japan); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 211 (Korea).

Andrena seneciorum: Kim, 1970: 661–662, 825 (first Korean record).

Andrena (Cnemidandrena) denticulata seneciorum: Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central, South), Japan, China, and Russian Far East.

Subgenus *Euandrena* Hedicke, 1933

Euandrena Hedicke, 1933, Mitt. zool. Mus. Berlin, 19: 212–213. Type-species: *Andrena bicolor* Fabricius, 1775, by original designation.

***Andrena (Euandrena) plumosa* Kim et Kim, 1989 털애꽃벌**

Andrena (Euandrena) plumosa Kim & Kim, 1989a, Korean J. Ent., 19(3): 200–201 (Korea); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 211 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central, South).

***Andrena (Euandrena) ruficrus rabicrus* Hirashima, 1957 붉은다리에꽃벌 (개칭)**

Andrena (Euandrena) ruficrus rabicrus Hirashima, 1957, Mushi, 30: 50 (Japan); Tadauchi & Lee, 1992: 50

(first Korean record); Kim, 1996: 211 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (incl., Jeju), Japan, and China.

***Andrena (Euandrena) luridiloma* Strand, 1915 작은털애꽃벌 (신칭)**

Andrena luridiloma Strand, 1915, Et. Mitt., 4: 72-73 (China).

Ansrena (Euandrena) stellaria Hirashima, 1964, J. Fac. Agr., Kyushu Univ., 13: 49 (Japan); Tadauchi & Lee, 1992: 49 (first Korean record); Kim, 1996: 211 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central), Japan, and China.

Subgenus *Holandrena* Perez, 1890

Holandrena Perez, 1890, Actes de la Societe Lenneenne de Bordeaux 44: 176. Type-species: *Melitta labialis* Kirby, 1802, by subsequent designation of Hedicke, 1933: 214.

***Andrena (Holandrena) mediocalens* Cockerell, 1931 꼭케렐애꽃벌**

Andrena mediocalens Cockerell, 1931, Amer. Mus. Novitate: 11.

Andrena (Gymnandrena) mediocalens : Kim & Kim, 1983a: 6 (first Korean record); Kim *et al.*, 1990: 3-4 (Korea); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 212 (Korea).

Andrena (Holandrena) mediocalens: Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central), and China.

***Andrena (Holandrena) valeriana* Hirashima, 1957 발레리아애꽃벌**

Andrena (Holandrena) valeriana Hirashima, 1957, Mushi, 30(9): 56 (Japan); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 212 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Andrena valeriana: Kim, 1970: 662, 825 (first Korean record).

Distribution. Korea (Central), Japan, China, and Russian Far East.

Note. This species was first recorded from Korean peninsula by Kim (1970), however, first author could not find any specimen of *A. valeriana* in Korea university except for the misidentified specimens as this.

Subgenus *Hoplandrena* Perez, 1890

Hoplandrena Perez, 1890, Actes de la Societe Lenneenne de Bordeaux 44: 170. Type-species: *Melitta trimmerana* Kirby, 1802, by subsequent designation of Hedicke, 1933: 214.

***Andrena (Hoplandrena) dentata* Smith, 1879 가시에꽃벌**

Andrena dentata Smith, 1879, Descr. New Spec. Hym., 51 (Japan); Kim, 1970: 659, 824 (first Korean record).

Andrena (Hoplandrena) dentata : Tadauchi & Lee, 1992: 49 (Jeju); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 212 (Korea); Tadauchi *et al.*, 1997: 190 (Korea: Jeju).

Distribution. Korea (incl. Jeju), Japan, China, and Russian Far East.

Notes. This species was first recorded from Korean peninsula by Kim (1970). This is a common species in Korea, and most of the specimens identified as *A. pruniphora* in Korea were *A. dentata*.

***Andrena (Hoplandrena) miyamotoi* Hirashima, 1964 미야모도애꽃벌**

Andrena (Hoplandrena) miyamotoi Hirashima, 1964, J. Fac. Agr., Kyushu Univ., 13: 87 (Japan); Kim & Kim, 1983b: 71 (first Korean record); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 212 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central), Japan, and Russian Far East.

***Andrena (Hoplandrena) nudigastroides* Yasumatsu, 1935 사과에꽃벌**

Andrena (Chlorandrena) nudigastroides Yasumatsu, 1935, Insects Jehol (3) 7: 40 (China).

Andrena pruniphora Hirashima, 1964, J. Fac. Agr., Kyushu Univ., 13: 93; Kim, 1970: 661, 825 (first Korean record).

Andrena (Hoplandrena) pruniphora: ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 212 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central), Japan, and China.

Notes. This species is rare in Korea. According to re-examination of specimens identified as *A. pruniphora* in Korea University, most of them were *A. dentata*. Previous records by Kim (1970) and Kim (1996) were likely to be misidentification of *A. dentata*.

***Andrena (Hoplandrena) rosae alfkeni* Friese, 1914 앵꽃벌**

Andrena alfkeni Fiese, 1914, Stett. ent. Ztg., 75: 228 (Siberia).

Andrena florea sachalinensis Yasumatsu, 1939, Ins. Mats., 13(2/3): 66–8 (Saghalien); Kim, 1970: 658, 824 (Korea); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 215 (Korea).

Andrena (Hoplandrena) rosae alfkeni: Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (North, Central), Japan, China, and Russian Far East.

Notes. This species was first recorded from Korean peninsula by Kim (1970), however, no specimens were found in Korea University. Authors examined a male specimen collected in Mt. Odaesan.

Subgenus *Lepidandrena* Hedicke, 1933

Lepidandrena Hedicke, 1933, Mitt. zool. Mus. Berlin, 19: 215. Type-species: *Andrena curvungula* Thomson, 1870, by original designation.

***Andrena (Lepidandrena) chengtehensis* Yasumatsu, 1935 만주에꽃벌 (신칭)**

Andrena (Poecilandrena) chengtehensis Yasumatsu, 1935, Insects Jehol, 8: 38 (Manchuria).

Andrena (Lepidandrena) lebedevi Popov, 1940. Trav. Inst. Zool. Acad. Sci. URSS, 6: (China) (Syn. by Tadauchi *et al.*, 1997)

Andrena (Lepidandrena) chengtehensis: Tadauchi *et al.*, 1997: 198 (first Korean record).

Distribution. Korea (Central, Jeju), and China.

Note. According to examination of a female, we added this species into fauna of Jeju in this study.

Subgenus *Leucandrena* Hedicke, 1933

Leucandrena Hedicke, 1933, Mitt. zool. Mus. Berlin, 19: 215. Type-species: *Melitta barbilabris* Kirby, 1802 (= *Apis sericea* Christ, 1791, *nec* Förster, 1771), by original designation.

***Andrena (Leucandrena) delicatula* Cockerell, 1818 긴솔에꽃벌 (코마에꽃벌) (개칭)**

Andrena delicatula Cockerell, 1818, Ann. Mag. nat. Hist., (9), 2: 481 (China).

Andrena (Simandrena) koma Hirashima, 1952, Mushi, 24: 32–33 (Korea); Kim, 1970: 824 (Korea); Tadauchi & Lee, 1992: 51 (Korea); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 214 (Korea). (Syn. by Xu & Tadauchi, 1997).

Andrena (Leucandrena) delicatula: Xu & Tadauchi, 1997: 180–181 (Korea); Tadauchi *et al.*, 1997: 191 (Jeju).

Distribution. Korea (incl. Jeju), and China.

Subgenus *Melandrena*, Perez, 1890

Melandrena, Perez, 1890, Actes de la Societe Linnéenne de Bordeaux 44: 170. Type-species: *Apis thoracica* Fabricius, 1775, by subsequent designation of Michener, 1997: 36.

Gymnandrena Hedicke, 1933, Mitt. zool. Mus. Berlin 19: 212. Type-species: *Apis thoracica* Fabricius, 1775 by original designation.

***Andrena (Melandrena) crassepunctata* Cockerell, 1931 살쥍곰보애꽃벌**

Andrena crassepunctata Cockerell, 1931, Amer. Mus. Nov., 446: 10 (China); Kim, 1970: 659 (first Korean Record).

Andrena (Gymnandrena) crassepunctata: Hirashima, 1957: 63 (first Korean record).

Andrena (Gymnandrena) crassepunctata [sic]: Kim *et al.*, 1990: 2 (Korea); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 211 (Korea).

Andrena (Melandrena) crassepunctata: Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central), and China (Manchuria).

***Andrena (Melandrena) koreana* Hirashima, 1952 고려애꽃벌**

Andrena (Gymnandrena) koreana Hirashima, 1952, Mushi, 24: 29 (Korea); Hirashima, 1957: 64 (Korea); Kim, 1970: 659, 824 (Korea); Kim *et al.*, 1990: 3 (Korea, Jeju); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 211 (Korea).

Andrena (Melandrena) koreana: Tadauchi *et al.*, 1997: 192 (Jeju).

Distribution. Korea (incl. Jeju), and China.

***Andrena (Melandrena) parathoracica* Hirashima, 1957 홍가슴애꽃벌**

Andrena (Gymnandrena) parathoracica Hirashima, 1957, Mushi, 30(10): 63 (Japan); Kim *et al.*, 1990: 4 (Korea); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 211 (Korea).

Andrena parathoracica: Kim, 1970: 660, 824 (first Korean record).

Andrena (Melandrena) parathoracica: Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (North?, Central, South), Japan, and Russian Far East.

***Andrena (Melandrena) sasakii* Cockerell, 1913 사사키애꽃벌**

Andrena sasakii Cockerell, 1913, Ann. Mag. nat. Hist. (8), 11: 189 (Japan).

Andrena (Gymnandrena) sasakii: Kim *et al.*, 1990: 4 (first Korean record); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 212 (Korea).

Andrena (Melandrena) sasakii: Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central), Japan, and China.

***Andrena (Melandrena) thoracica sinensis* Cockerell, 1910 중국애꽃벌**

Andrena sinensis Cockerell, 1910, Trans. Amer. ent. Soc., 36: 249 (China).

Andrena thoracica: Radoszkowski, 1890: 230 (first Korean record) (nec Fabricius).

Andrena thoracica sinensis: Yasumatsu, 1941: 281 (Korea); Kim, 1970: 658, 824 (Korea).

Andrena (Gymnandrena) thoracica sinensis: Hedicke, 1939: 337; Yasumatsu, 1946, : 20 (Korea); Hirashima, 1957: 62 (Korea); Kim *et al.*, 1990: 4-5 (Korea); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 212 (Korea).

Andrena (Melandrena) thoracica sinensis: Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (North, Central), and Northern China.

Note. This species was described from Korean peninsula by Radoszkowski (1890) as *A. thoracica*.

Subgenus *Micrandrena* Ashmead, 1899

Micrandrena Ashmead, 1899, Trans. Amer. ent. Soc., 26: 89. Type-species: *Micrandrena pacifica* Ashmead, 1899 (= *Andrena melanochoa* Cockerell, 1889), by original designation.

***Andrena (Micrandrena) brassicae* Hirashima, 1957 유채에꽃벌 (신칭)**

Andrena (Micrandrena) brassicae Hirashima, 1957, Mushi, 30: 52 (Japan); Tadauchi & Lee, 1992: 53 (first Korean record); Kim, 1996: 213 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central, South), Japan, and China.

***Andrena (Micrandrena) chirisana* Tadauchi, 1992 지리에꽃벌 (신칭)**

Andrena (Micrandrena) chirisana Tadauchi, 1992, in Tadauchi & Lee, Esakia, 32: 53 (Mt. Jirisan, Korea).

Distribution. Korea (South).

Notes. This species was described from Mt. Jirisan, southern part of Korean peninsula by Tadauchi & Lee (1992), but we have not able to collect them yet.

***Andrena (Micrandrena) hikosana* Hirashima, 1957 히고산에꽃벌**

Andrena (Micrandrena) hikosana Hirashima, 1957, Mushi, 30: 53 (Japan); Kim & Kim, 1983a: 7 (first Korean record); Tadauchi & Lee, 1992: 52 (Korea); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 213 (Korea); Tadauchi *et al.*, 1997: 194 (Jeju).

Distribution. Korea (incl. Jeju), Japan, China, Russian Far East.

***Andrena (Micrandrena) kaguya* Hirashima, 1965 꼬마에꽃벌**

Andrena (Micrandrena) kaguya Hirashima, 1965, J. Fac. Agr., Kyushu Univ., 13: 467 (Japan); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 213 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).
Andrena (Micrandrena) brassicae : Kim & Kim, 1983a: 7 (first Korean record). (nec Hirashima)

Distribution. Korea (Central), Japan, and China.

Notes. This species was first recorded from Korean peninsula as *A. brassicae* by Kim & Kim (1983a), however, Kim (1996) recognized it as misidentification of *A. kaguya* in her doctor thesis, 1985.

***Andrena (Micrandrena) komachi* Hirashima, 1965 탐라에꽃벌 (신칭)**

Andrena (Micrandrena) komachi Hirashima, 1965, J. Fac. Agr., Kyushu Univ., 13: 469 (Japan); Tadauchi *et al.*, 1997: 194–195 (first Korean record, Jeju).

Distribution. Korea (Incl. Jeju), Japan, and China.

***Andrena (Micrandrena) munakatai* Tadauchi, 1985 산오름에꽃벌 (신칭)**

Andrena (Micrandrena) munakatai Tadauchi, 1985, J. Fac. Agr., Kyushu Univ., 30: 70; Tadauchi & Lee, 1992: 53 (first Korean record); Kim, 1996: 213 (Korea); Tadauchi *et al.*, 1997: 195 (Jeju).

Distribution. Korea (incl. Jeju), Japan, and China.

***Andrena (Micrandrena) sublevigata* Hirashima, 1966 해오름에꽃벌 (신칭)**

Andrena (Micrandrena) sublevigata Hirashima, 1966, J. Fac. Agr., Kyushu Univ., 14: 91, 95 (Japan); Tadauchi & Lee, 1992: 52 (first Korean record); Kim, 1996: 213 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central, South), Japan, and China.

Subgenus *Oreomelissa* Hirashima et Tadauchi, 1975

Oreomelissa Hirashima et Tadauchi, 1975, J. Fac. Agr., Kyushu Univ., 19: 175–177. Type-species: *Andrena mitakensis* Hirashima, 1963, by original designation.

***Andrena (Oreomelissa) amurensis* Friese, 1922 금강애꽃벌 (新稱)**

Andrena amurensis Friese, 1922, Konowia, 1: 212 (Amur).

Andrena (Oreomelissa) mitakensis Hirashima & Tadauchi, 1975, J. Fac. Agr., Kyushu Univ., 19: 178 (in part, first Korean record).

Andrena (Oreomelissa) amurensis: Tadauchi *et al.*, 1997: 199–200 (N. Korea, Mt. Geumgansan).

Distribution. Korea (North, Central), China, and Russian Far East.

Notes. This species was first recorded from Korean peninsula by Hirashima & Tadauchi (1975) as *A. mitakensis* Hirashima, however, corrected by Tadauchi *et al.* (1997).

***Andrena (Oreomelissa) kamikochiana* Hirashima, 1963 산마루애꽃벌 (신칭)**

Andrena (Calomelissa) kamikochiana Hirashima, 1963, J. Fac. Agr., Kyushu Univ., 12: 251 (Japan).

Andrena (Oreomelissa) kamikochiana: Tadauchi *et al.*, 1997: 201 (first Korean record).

Distribution. Korea (North), Japan, and China.

Subgenus *Plastandrena* Hedicke, 1933

Plastandrena Hedicke, 1933, Mitt. Zool. Mus. Berlin, 19: 217–218. Type-species: *Melitta tibialis* Kirby, 1802, by original designation.

***Andrena (Plastandrena) magnipunctata* Kim et Kim, 1989 큰점애꽃벌**

Andrena (Plastandrena) magnipunctata Kim et Kim, 1989, Korean J. Ent., 19: 201 (Korea); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 214 (Korea); Tadauchi *et al.*, 1997: 195–196 (Jeju).

Distribution. Korea (incl. Jeju), and China.

Notes. This species was described from Mt. Deogyusan, Korea by Kim & Kim (1989). The record from Jeju by Tadauchi *et al.* (1997) was likely to be misidentification with other species, according to description and figures, however, we could not examine the specimen used for description.

***Andrena (Plastandrena) transbaicalica* Popov, 1949 기마애꽃벌 (신칭)**

Andrena (Plastandrena) transbaicalica Popov, 1949, Ent. Rev. USSR., 30: 398 (Siberia); Tadauchi *et al.*, 1997: 200 (in list) (Korea).

Andrena (Plastandrena) astragalina Hirashima, 1957, Mushi, 30: 51 (Japan); Tadauchi & Lee, 1992: 56 (first Korean record).

Distribution. Korea (Central, South), Japan, China, and Russia (Siberia, Far East).

Subgenus *Poecilandrena* Hedicke, 1933

Subgenus *Poecilandrena* Hedicke, 1933, Mitt. Zool. Mus. Berlin, 19: 218. Type-species: *Andrena labiata* Fabricius, 1781, by original designation.

***Andrena (Poecilandrena) fukuokensis* Hirashima, 1952 구주에꽃벌**

Andrena (Micrandrena) fukuokensis Hirashima, 1952. Mushi, 23: 39 (Japan).

Andrena (Poecilandrena) fukuokensis : Kim & Kim, 1983a: 6 (first Korean record); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 214 (Korea); Tadauchi *et al.*, 1997: 196–197 (Jejudo).

Distribution. Korea (incl. Jejudo), Japan, China, and Russian Far East.

Subgenus *Rhaphadrena* LaBerge, 1871

Rhaphadrena LaBerge, 1971, Trans. Amer. ent. Soc., 97: 507. Type-species: *Andrena prima* Casad et Cockerell, 1896, by original designation.

***Andrena (Rhaphadrena) richardsi* Hirashima, 1965 리차드에꽃벌**

Andrena richardsi Hirashima, 1965. J. Fac. Agr., Kyushu Univ., 13: 482 (Japan); Kim, 1970: 825 (first Korean record).

Andrena (Leucandrena) richardsi: Tadauchi & Lee, 1992: 54 (Korea).

Andrena (Notandrena) richardsi: ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 213 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central, South), and Japan.

Subgenus *Simandrena* Pérez, 1890

Simandrena Pérez, 1890, Actes Soc. Linn. Bordeaux, 44: 174. Type-species: *Andrena propinqua* Schenck, 1853 (= *Melitta dorsata* Kirby, 1802), by subsequent designation of Hedicke, 1933, Mitt. Zool. Mus. Berlin, 19: 218.

***Andrena (Simandrena) kerriae* Hirashima, 1952 꼬마허리에꽃벌 (신칭)**

Andrena (Simandrena) kerriae Hirashima, 1965, J. Fac. Agr., Kyushu Univ., 13: 499 (Japan); Tadauchi & Lee, 1992: 51 (first Korean record); Tadauchi & Xu, 1995: 217 (Korea); Kim, 1996: 215 (Korea); Tadauchi *et al.*, 1997: 197 (Jejudo).

Distribution. Korea (South, Jejudo), Japan, China, and Russian Far East.

***Andrena (Simandrena) opacifovea* Hirashima, 1952 허리에꽃벌 (신칭)**

Andrena (Simandrena) opacifovea Hirashima, 1952, Mushi, 24: 31 (Japan).

Andrena (Simandrena) opacifovea opacifovea: Tadauchi & Lee, 1992: 51 (first Korean record); Kim, 1996: 214 (Korea).

Distribution. Korea (Central), and Japan.

Note. This species was first recorded from Korean peninsula by Tadauchi & Lee (1992), but Tadauchi *et al.* (1997) omitted it in Korean andrenid list.

***Andrena (Simandrena) yamato* Tadauchi et Hirashima, 1983 둥근허리에꽃벌**

Andrena (Simandrena) yamato Tadauchi et Hirashima, 1983, Esakia, 20: 83 (Japan); Tadauchi & Lee, 1992: 50 (Korea); Tadauchi & Xu, 1995: 210 (Korea); Kim, 1996: 214 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Andrena (Simandrena) opacifovea koreana Kim & Kim, 1989, Korean J. Ent., 19: 202 (Korea); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 214 (Korea).

Distribution. Korea (incl. Jejudo), Japan, China, and Russian Far East.

Notes. This species was described from South Korea by Kim & Kim (1989) as *A. opacifovea koreana*, and later this subspecies treated it as a junior synonym of this species by Tadauchi &

Lee (1992).

Subgenus *Stenomelissa* Hirashima et LaBerge, 1965

Stenomelissa Hirashima et LaBerge, 1965, J. Fac. Agr., Kyushu Univ., 13: 500. Type-species: *Andrena halictoides* Smith, 1869, by original designation.

***Andrena (Stenomelissa) halictoides* Smith, 1869 긴얼굴애꽃벌**

Andrena halictoides Smith, 1869, Entomologist, 4: 205 (Japan).

Andrena (Stenomelissa) halictoides : Kim & Kim, 1983a: 6 (first Korean record); Tadauchi & Lee, 1992: 55 (Korea); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 215 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (Central, South), Japan, China, and Russian Far East.

Subgenus *Taeniandrena* Hedicke, 1933

Taeniandrena Hedicke, 1933, Mitt. Zool. Mus. Berlin, 19: 219. Type-species: *Melitta ovatula* Kirby, 1802, by original designation.

***Andrena (Taeniandrena) ezoensis* Hirashima, 1965 예조에꽃벌**

Andrena (Taeniandrena) ezoensis Hirashima, 1965, J. Fac. Agr., Kyushu Univ., 13: 506 (Japan); Kim & Kim, 1983b: 71–72 (first Korean record); Tadauchi & Lee, 1992: 54 (Korea: Jeju); ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 215 (Korea); Tadauchi *et al.*, 1997: 200 (Korea, in list).

Distribution. Korea (incl. Jeju), Japan, China, and Russian Far East.

Subgenus *Trachandrena* Robertson, 1902

Trachandrena Robertson, 1902, Trans. Amer. ent. Soc., 28: 187–189. Type-species: *Andrena rugosa* Robertson, 1891, by original designation.

***Andrena (Trachandrena) haemorrhhoa japonibia* Hirashima, 1957 주름허리애꽃벌**

Andrena (Trachandrena) haemorrhhoa japonibia Hirashima, 1957, Mushi, 30: 53 (Japan); Kim & Kim, 1983b: 72 (first Korean record); Tadauchi *et al.*, 1992: 56 (Korea); Kim, 1996: 215 (Korea); Tadauchi *et al.*, 1997: 197–198 (Korea).

Andrena (Taeniandrena) haemorrhhoa japonibia: ESK & KSAE, 1994: 266 (Korea).

Andrena (Trachandrena) foveopunctata: Kim & Kim, 1983a: 7 ; Tadauchi *et al.*, 1997: 200 (Korea, in list). (nec Alfken, misidentification).

Distribution. Korea (incl. Jeju), Japan, China, and Russian Far East.

Subfamily Panuraginae 애꽃벌불이亞科

Tribe Panurigini 애꽃벌불이族

Genus *Panurginus* Nylander, 1848 애꽃벌불이屬

Panurginus Nylander, 1848, Notiser ur Sällskapet pro Fauna et Flora Fennica Forbandlingar 1: 223. Type-species: *Panurginus niger* Nylander, 1848, monobasic.

***Panurginus crawfordi* Cockerell, 1914 애꽃벌불이 (북지애꽃벌)**

Panurginus crawfordi Cockerell, 1914, Ann. Mag. Nat. Hist., (8), 13: 279 (Japan); Kim, 1970: 672, 825 (first Korean record); Tadauchi & Lee, 1992: 56 (Korea); ESK & KSAE, 1994: 266 (Korea).

Distribution. Korea (incl. Jejudo), Japan, and Russian Far East.

Acknowledgments We are grateful to Dr. M.-R. Kim and Mr. J.-D. Yeo, Korea University, Dr. Prof. K.-S. Woo, Seoul National University, and Dr. S.-H. Jung, Jejudo Folklore and Natural History Museum for providing precious specimens.

We are indebted to Associate Professor O. Tadauchi and Dr. Xu, H.-L., Kyushu University, Japan, for their kind help and valuable suggestions during our visit to the Kyushu University.

REFERENCES

- Entomological Society of Korea and Korean Society of Applied Entomology [ESK& KSAE], 1994. Check list of Insects from Korea. Kon-Kuk University Press, 744 pp.
- Hedicke, H. 1933. Beitrage zur Systematik der Gatung *Andrena* F. (Hym. Apidae). Mitt. zool. Mus. Berlin 19: 199-220.
- Hirashima, Y. 1952a. Descriptions and records of bees of the genus *Andrena* from Eastern Asia, II. (Hymenoptera, Andrenidae). Mushi 24(7): 29-33.
- Hirashima, Y. 1952b. Description of *Andrena yasumatsui* n. sp., with a provisional key to the subgenera of Palearctic *Andrena* (Hymenoptera, Andrenidae). Mushi 24(10): 59-65.
- Hirashima, Y. 1953. The Insect fauna of Mt. Ishizuchi and Omogo Valley, Iyo, Japan. Four new species of Apoidea (Hymenoptera). Trans. Shikoku ent. Soc. 3(5/6): 132-133.
- Hirashima, Y. 1957a. Descriptions and records of bees of the genus *Andrena* from Eastern Asia. III (Hymenoptera, Andrenidae). Mushi 30(9): 49-57.
- Hirashima, Y. 1957b. Descriptions and records of bees of the genus *Andrena* from Eastern Asia. IV (Hymenoptera, Andrenidae). Mushi 30(10): 59-66.
- Hirashima, Y. 1963a. Systematic and biological studies of the family Andrenidae of Japan (Hymenoptera, Apoidea). Part 2. Systematics, 1. J. Fac. Agr., Kyushu Univ. 12(2): 117-154.
- Hirashima, Y. 1963b. Systematic and biological studies of the family Andrenidae of Japan (Hymenoptera, Apoidea). Part 2. Systematics, 2. J. Fac. Agr., Kyushu Univ. 12(4): 241-263.
- Hirashima, Y. 1964a. Systematic and biological studies of the family Andrenidae of Japan (Hymenoptera, Apoidea). Part 2. Systematics, 3. J. Fac. Agr., Kyushu Univ. 13(1): 39-69.
- Hirashima, Y. 1964b. Systematic and biological studies of the family Andrenidae of Japan (Hymenoptera, Apoidea). Part 2. Systematics, 4. J. Fac. Agr., Kyushu Univ. 13(1): 71-97.
- Hirashima, Y. 1965a. Systematic and biological studies of the family Andrenidae of Japan (Hymenoptera, Apoidea). Part 2. Systematics, 5. J. Fac. Agr., Kyushu Univ. 13(3): 461-491.
- Hirashima, Y. 1965b. Systematic and biological studies of the family Andrenidae of Japan (Hymenoptera, Apoidea). Part 2. Systematics, 6. J. Fac. Agr., Kyushu Univ. 13(3): 493-517.
- Hirashima, Y. 1966. Systematic and biological studies of the family Andrenidae of Japan (Hymenoptera, Apoidea). Part 2. Systematics, 7. J. Fac. Agr., Kyushu Univ. 14(1): 89-131.
- Hirashima, Y. 1975. A new subgenus of the genus *Andrena* (Hymenoptera, Andrenidae) from Japan and allied areas. J. Fac. Agr., Kyushu Univ. 19: 175-186.
- Hirashima, Y., O. Tadauchi and H. Suda. 1979. New or little known bees of Japan (Hymenoptera, Apoidea) I. Supplementary note on two *Andrena* species. Esakia, 14: 135-143.
- Kim, C.H. 1970. Illist. Encycl. Fauna & Flora of Korea 11(3). 835pp. Seoul (in Korean).
- Kim, M.R. 1996. Synonymic List and Distribution of Andreninae (Hymenoptera) in Korea. Ent. Res. Bulletin Suppl.: 209-217.
- Kim, M.R. and C.W. Kim. 1983a. On the nine unrecorded Andrenidae from Korea (Hymenoptera: Apoidea). Korean J. Ent. 13(1): 5-9.
- Kim, M.R. and C.W. Kim. 1983b. On the 5 unrecorded Andrenidae from Korea (Hymenoptera: Apoidea). Ent. Res. Bulletin 9: 69-76.
- Kim, M.R. and C.W. Kim. 1989a. Systematic Study of Andrenidae from Korea (Hym.: Apoidea) (On the Three new Species and one new subspecies), Korean J. Ent. 19(3): 199-206.

- Kim, M.R. and C.W. Kim. 1989b. Numerical Phenetic Analysis of the Genus *Andrena* from Korea (Hymenoptera: Andrenidae). Ent. Res. Bulletin 15: 25–33.
- Kim, M.R., C.W. Kim and C.S. Kim. 1990. Systematic Study of Genus *Andrena* (Andrenidae; Hymenoptera) from Korea II. Subgenus *Gymandrena*. Ent. Res. Bulletin 16: 1–10.
- Michener, C.D. 1997. Genus–Group Names of Bees and Supplemental Family–Group Names. Scientific Papers Nat. Hist. Mus. Univ. Kansas 1: 1–81.
- Michener, C.D. 2000. The Bees of the world. 913pp. Baltimore.
- Radoszkowski, O. 1890. Hymenoptera de Koree. Horae Soc. ent. Ross. 24: 229–232.
- Tadauchi, O. and Y. Hirashima. 1983. New or little known bees of Japan (Hymenoptera, Apoidea) IV. Supplements to *Andrena* (*Simandrena*). Esakia 20: 81–92.
- Tadauchi, O. and Y. Hirashima. 1984. New or little known bees of Japan (Hymenoptera, Apoidea) V. Supplements to *Andrena* (*Hoplandrena*). Kontyu 52(2): 278–285.
- Tadauchi, O. and Y. Hirashima. 1984. Synopsis of *Andrena* (*Euandrena*) of Japan (Hymenoptera, Andrenidae). Esakia 22: 107–113.
- Tadauchi, O. and Y. Hirashima. 1987. Descriptions of two new species and one unrecorded female of the genus *Andrena* from Japan (Hymenoptera, Andrenidae). Esakia 25: 133–139.
- Tadauchi, O. and Y. Hirashima. 1988. Synopsis of *Andrena* (*Stenomelissa*) with a new species from Japan (Hymenoptera, Andrenidae). J. Fac. Agr., Kyushu Univ. 33(1/2): 67–76.
- Tadauchi, O. and C.E. Lee. 1992. The family Andrenidae of Korea (Hymenoptera, Apoidea) I. Esakia 32: 47–58.
- Tadauchi, O. and H.L. Xu. 1995. A revision of the subgenus *Simandrena* of the genus *Andrena* of eastern Asia with a key to palaearctic species (Hymenoptera, Andrenidae). Esakia 35: 201–222.
- Tadauchi, O. and H.L. Xu. 2000. A revision of the subgenus *Poecilandrena* of the genus *Andrena* of eastern Asia (Hymenoptera, Andrenidae). Ins. Koreana 17(1/2): 79–90.
- Tadauchi, O., Y. Hirashima and T. Matsumura. 1987. Synopsis of *Andrena* (*Andrena*) of Japan (Hymenoptera, Andrenidae). Part I. J. Fac. Agr., Kyushu Univ. 31(1/2): 11–35.
- Tadauchi, O., Y. Hirashima & T. Matsumura. 1987. Synopsis of *Andrena* (*Andrena*) of Japan (Hymenoptera, Andrenidae). Part II. J. Fac. Agr. Kyushu Univ. 31(1/2): 37–54.
- Tadauchi, O., H.L. Xu and J.C. Paik. 1997. The family Andrenidae of Korea (Hymenoptera, Apoidea) II. Esakia 37: 187–202.
- Xu, H.L. and O. Tadauchi, 1997. Subgeneric Positions and Redescriptions of East Asia *Andrena* Preserved in Two U.S. Natural History Museums (Hymenoptera: Andrenidae). Esakia 37: 177–185.
- Xu, H.L. and O. Tadauchi, 1998. Subgeneric Positions and Redescriptions of Strand's Chinese *Andrena* Preserved in the German Entomological Institute (D.E.I., Eberswalde) (Hymenoptera: Andrenidae). Esakia 38: 89–103.
- Xu, H.L., O. Tadauchi and Y.-R. Wu. 2000. A revision of the subgenus *Oreomelissa* of the genus *Andrena* of eastern Asia (Hymenoptera, Andrenidae). Esakia 40: 41–61.
- Yasumatsu, K. 1935. Insects of Jehol VIII. Order Hymenoptera II. Superfamily Apoidea. Rept. 1st. Sci. Exped. Manchoukuo etc. Sect. 5(1), Pt. 12, Art. 67: 1–47 (in Japanese and in English).
- Yasumatsu, K. 1938. A new *Andrena*-species from Japan (Hymenoptera, Apoidea). Mushi 11(1): 67–69.
- Yasumatsu, K. 1938. On the occurrence of *Andrena vitiosa* Smith in Japan (Hym., Andrenidae). Zool. Mag. 50(7): 358–361.
- Yasumatsu, K. 1939. Three new or unrecorded Apoidea from Saghalien (Hymenoptera). Ins. Mats. 13(2/3): 66–70.
- Yasumatsu, K. 1941. A list of the Far Eastern species of the genus *Andrena* (Hym., Apoidea). Peking Natural History Bulletin 15(4): 273–284.

(Received: December 5, 2002, Accepted: January 30, 2003)